

electronic component with an electrode (5) of the board with interposition of an anisotropic conductive layer (10) in which an insulating resin mixed with an inorganic filler is mixed with a conductive particle (10a) without leveling the formed bump;

subsequently hardening the insulating resin of the anisotropic conductive layer interposed between the electronic component and the circuit board while correcting warp of the board with a pressure P1 applied as a pressure force to the electronic component against the circuit board and heat applied from an upper surface of the electronic component by means of a tool (8) heated to a specified temperature; and

subsequently bonding the electronic component to the circuit board while alleviating a stress when hardening the insulating resin of the anisotropic conductive layer by reducing the pressure force to a pressure P2 lower than the pressure P1 after a lapse of a specified time, so that the electrode of the electronic component is electrically connected with the electrode of the circuit board.

9. An electronic component mounting method as claimed in claim 8, wherein the pressure P1 is not smaller than 20 gf per bump, and the pressure P2 is not greater than one-half the pressure P1.

10. An electronic component mounting apparatus

comprising:

5 a device (7, 109, 200, 201) for sticking an anisotropic conductive layer (10), in which an insulating resin mixed with an inorganic filler is mixed with a conductive particle (10a), to an electrode (5) of a circuit board (4) or an electronic component (1);

10 a device (93, 193) for forming a bump (3, 103), without leveling, by forming a ball (96, 96a) by an electric spark at a tip of a metal wire (95) on an electrode (2) of the electronic component (1) similarly to wire bonding and forming by thermocompression-bonding this to the electrode of the board with supersonic waves by means of a capillary (93, 193);

15 a device (600) for mounting the electronic component on the electrode (5) of the circuit board (4) through positional alignment; and

20 a device (8, 9) for bonding the electronic component to the circuit board by hardening the insulating resin of the anisotropic conductive layer interposed between the electronic component and the circuit board while correcting warp of the board with a pressure force of not smaller than 20 gf per bump applied to the electronic component against the circuit board and with heating by means of the tool (8), so that the electrode of the
25 electronic component is electrically connected with the

electrode of the circuit board.

11. An electronic component mounting apparatus comprising:

a device (7, 109, 200, 201) for sticking an anisotropic conductive layer (10), in which an insulating resin mixed with an inorganic filler is mixed with a conductive particle (10a), to an electrode (5) of a circuit board (4) or an electronic component (1);

a device (93, 193) for forming a gold bump (3, 103), without leveling, by forming a ball (96, 96a) by an electric spark at a tip of a metal wire (95) on an electrode (2) of the electronic component (1) similarly to wire bonding and forming by thermocompression-bonding this to the electrode of the board with supersonic waves by means of a capillary (93, 193);

a device (600) for mounting the electronic component on the electrode (5) of the circuit board (4) through positional alignment;

a device (620) for metallically bonding the gold bump to the electrode of the board with supersonic waves applied while shaping the tip so as to prevent collapse of a neck portion of the gold bump with a load applied from an upper surface of the electronic component by means of a tool (628); and

a device (8, 9) for bonding the electronic